



DEVELOPING A KNOWLEDGE BASE ON GENOMICS AND POPULATION HEALTH

WHAT IS THE PUBLIC HEALTH ISSUE?

To translate genetic research into opportunities for preventive medicine and public health, population-based epidemiologic studies are needed to measure the interactions of genetic variants with modifiable risk factors and their joint contributions to disease risk. In addition, a coordinated, international, interdisciplinary effort is required to synthesize, evaluate and interpret this information.

WHAT HAS CDC ACCOMPLISHED?

CDC has established the Human Genome Epidemiology Network (HuGENet™), a collaboration of approximately 700 individuals from diverse backgrounds and organizations committed to developing and disseminating population-based human genome epidemiologic information. HuGENet™ products include:

- a continuously updated, searchable online information system indexing population-based scientific literature in human genome epidemiology,
- HuGE reviews published in peer-reviewed journals,
- HuGE fact sheets, e-journal clubs and case studies that can be used for training, and
- HuGE workshops for training and methods development.

Examples of Program in Action

- In 2004 alone, HuGENet™ collaborators published 10 HuGE reviews and 20 online e-journal clubs. At the end of the year, the online information system contained 14,127 citations indexed by gene, health outcome, and personal or environmental factors.
- A CDC-wide working group of epidemiologists and laboratorians developed a proposal to determine the prevalence of selected genotypes of public health importance using the nationally representative, population-based NHANES III DNA Bank. In collaboration with the National Cancer Institute, accurate, low-cost genotyping for >600,000 SNPs in ~7300 specimens will be completed in late 2005.
- HuGENet™ has partnered to convene two recent meetings focused on methods development for human genome epidemiology:
 - A workshop in Cambridge, UK, on November 2–3, 2004, held in collaboration with the Cambridge Genetics Knowledge Park (CGKP), engaged epidemiologists, geneticists, statisticians, clinicians and information specialists in discussion of methods for systematic reviews of gene-disease association studies and epidemiological studies of gene-gene and gene-environment interaction.
 - A meeting in Atlanta on February 7–8, 2005, held in collaboration with the Public Population Project in Genomics (P3G) and the National Heart, Lung and Blood Institute (NHLBI), convened an international, multidisciplinary group of experts to discuss content of a statement for harmonizing the format and improving the quality of publications arising from biobank-based genetic epidemiologic studies.

WHAT ARE THE NEXT STEPS?

CDC will continue its collaboration with intra-agency, national and international partners to provide leadership, guidance and support for the collection and synthesis of population-based data to characterize the contribution of genetic variants and gene-environment interactions in health and disease.